Predicting persistence or withdrawal in female handballers with Social Exchange theory

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ABSTRACT

Two complementary studies were conducted to explain the dropout phenomenon with French female handball players, utilizing the tenets of social exchange theory (Thibaut & Kelley, 1959; Rusbult, 1980). In the first study, the aim was to more fully explore the sources of enjoyment by emphasizing the key variables in the costs/benefits analysis. We postulate that the costs/benefits analysis consists in each athlete estimating the probability of reaching the most desired consequences for him or her (e.g., learn and improve skill, affiliation with others, be better than the others). The subjects were 488 French women aged from 15-19 years. Structural equation modeling (SEM) revealed that enjoyment in handball was predicted by a latent variable (named perceived benefits) subjacent to perceptions of competence, autonomy, relatedness, progress, coach's support, and time of play. In the second study, we tested a sport commitment model based on the social exchange postulates, using SEM analyses and a prospective design over 8 months. In view of the results of study 1, we replaced the construct of enjoyment with perceived benefit. This analysis provides a more comprehensive understanding of the enjoyment construct and is more consistent with the notion of cost and benefits outlined in social exchange theory (Thibaut and Kelley, 1959). Participants were 253 French handball players between the ages of 14 and 16 years. A first set of analyses, focused on the differences, showed that dropout players perceived themselves as significantly less competent, less autonomous, less related to their team, lower in progress and less supported by their coach than persistent players. The second set of analyses with SEM revealed that the commitment level was positively associated with perceived benefits and negatively with social constraints and alternatives opportunities. Finally, a lack of commitment led to dropping out of the sport 8-months later.

Key words: Dropout / Sport / Social Exchange Model / Commitment / Motivation

RÉSUMÉ

Deux études complémentaires destinée à mieux comprendre le phénomène de l'abandon chez des handballeuses françaises à partir des postulats de la théorie de l'échange social (Thibaut & Kelley, 1959; Rusbult, 1980), ont été conduites. La première étude s'est intéressée aux sources du plaisir lié à la pratique sportive. Nous avons postulé que l'analyse coûts/bénéfices correspondait à une estimation d'atteindre les motifs les plus importants de pratique (e.g., apprendre et progresser, avoir des amis, être meilleur que les autres). Les sujets étaient 488 handballeuses françaises âgées de 15 à 19 ans. Les résultats d'analyses par équations structurelles (AES) ont révélé que le plaisir en handball était prédit par une variable latente (dénommée "bénéfices perçus" dans l'activité) sous jacente aux perceptions de compétence, d'autonomie, d'affiliation, de progrès, du soutien de l'entraîneur, et du temps de jeu moyen en match. Dans la deuxième étude, nous avons testé un modèle de l'engagement sportif basé sur les postulats de la théorie de l'échange social, en utilisant des AES et un suivi longitudinal de 8 mois. Au regard, des résultats de la première étude, nous avons remplacé le construit de plaisir par celui des bénéfices perçus. Cette analyse permet une compréhension plus complète des notions de coûts et de bénéfices développées dans la théorie de l'échange social (Thibaut et Kelley, 1959). Les participants étaient 253 joueuses âgées de 14 à 16 ans. Les résultats ont montré que les joueuses qui avaient abandonné se percevaient moins compétentes, moins autonomes, moins liées à leur équipe, moins en progrès et moins encouragées par leur entraîneur que les joueuses persistantes. De plus, l'AES a révélé que le niveau d'engagement était associé positivement aux bénéfices perçus, et négativement aux contraintes sociales et aux activités alternatives. En retour, un faible niveau d'engagement prédisait un taux élevé d'abandon 8 mois plus tard.

Mots- clés : Abandon / Sport / Modèle de l'échange social / Engagement / Motivation

Predicting persistence or withdrawal in female handballers with Social Exchange Theory

What factors influence the degree of athletes' investment in their physical activity? Why do some people develop a strong commitment to continue their sport activity, while others fail to do so and quit their sport? Most psychology or sociology research on sport motivation has sought to answer these questions. These studies have sought to understand the paradox which exists between on the one hand a massive passion for sports, and on the other hand high levels of dropout which occurs during adolescence, particularly for girls (Gould, 1987; Russell, Allen, & Wilson, 1996; Sallis & Patrick, 1996; Wankel & Mummery, 1996). In a study of French female handball players, 50% dropped-out between 13 and 15 years of age after two or three years of practice (Guillet & Sarrazin, 1999). Even if some of these teenagers were to return to handball after discontinuing their initial involvement, this phenomenon has alarmed the French Handball federation administrators who view player retention as a key goal. Youth sport researchers, administrators and health professionals have become increasingly concerned with identifying the determinants of continued sport activity (see Martinsen & Stephens, 1994).

Different motivational theories can be used to study dropout and sport commitment (see Gould, 1987; Guillet, Sarrazin & Cury, 2000; Sarrazin & Guillet, in press; Weiss & Chaumeton, 1992, for reviews). However, one theoretical approach that seems particularly well suited to study the psychological processes underlying continued involvement and dropout in sport is based on Social Exchange Theory (Homans, 1961), particularly Interdependence Theory (Kelley, 1983; Kelley & Thibaut, 1978; Thibaut & Kelley, 1959) and Rusbult's Investment Model of Commitment (1980, 1983). Many youth sport researchers have employed this Social Exchange framework to explain sport commitment and/or withdrawal (e.g., Carpenter & Coleman, 1998;

Gould, 1987; Johns, Lindner, & Wolko, 1990; Scanlan, Carpenter, Lobel, & Simons, 1993; Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993; Scanlan, Simons, Carpenter, Schmidt, & Keeler, 1993; Schmidt & Stein, 1991; Smith, 1986).

Generally, these researchers have employed the construct of *commitment* to describe a set of factors that explain persistence to a course of action or a relationship – even in the face of adversity (e.g., Becker, 1960; Brickman, 1987; Kelley, 1983; Rusbult, 1980). Commitment is a term that signifies the motivational force behind persistence. It is generally defined as an individual's intent to stick with an activity or a relationship and to feel psychologically "attached" to it (Rusbult, 1983). In the sport domain, Scanlan, Carpenter, Schmidt, et al. defined commitment as a "psychological construct representing the desire and resolve to continue sport participation" (1993, p.6). In short, commitment represents individuals' psychological state of attachment to their participation or a motivational force for continued involvement. This construct must clearly be distinguished from its antecedents and consequences (Kelley, 1983). Its consequences can be actual behavior, like persistence to a relationship (e.g., Bui, Peplau & Hill, 1996; Rusbult, 1980, 1983; Duffy & Rusbult, 1986; Sprecher, 1988), job turnover (e.g., Rusbult & Farrell, 1983) or sport dropout. Three major classes of what Kelley (1983) labels "causal conditions" (or antecedent) for commitment can be identified. The first class identifies the extent to which the relationship is viewed as attractive**,** for example, in terms of love, liking, satisfaction or enjoyment. The second class of causal conditions reflects the degree to which alternatives to the current commitment are viewed as more or less attractive, and the final class considers the restraining forces or barriers to termination (i.e., personal investments and social constraints - see Figure 1).

Insert figure 1 here

In their social exchange model, Thibaut and Kelley (1959) begin with the assumption that human behavior is governed primarily by the desire to maximize positive experiences and to minimize negative ones. From this perspective, people participate in relationships and activities only so long as the outcomes of participation are sufficiently favorable. Favorability is determined by the *balance between rewards and costs* with rewards and costs viewed as generic terms referring to a variety of potential consequences. In the majority of models, the cost/benefits analysis is expressed by an "attractive" variable, like satisfaction (e.g., Rusbult, 1980, 1983) or enjoyment (e.g., Scanlan, Carpenter, Schmidt, et al., 1993), that summarizes the individual's affective experience for an activity or a relationship. Individuals should be satisfied (or enjoyed) with their relationship or activity when the benefits outweigh the costs, and dissatisfaction occurs when costs outweigh benefits. In turn, greater satisfaction or enjoyment is expected to be related to greater commitment (see Figure 1).

According to Thibaut and Kelley (1959), the decision to remain in a relationship or activity is not based solely on the balance between rewards and costs. The decision to persist or to drop out also depends on the availability and *attractiveness of the alternatives*. Consequently, someone may choose to stay involved in sport even if costs are exceeded by rewards because no alternative opportunities are available. Similarly, an athlete who perceives that the rewards outweigh costs in a program may discontinue involvement because a more desirable alternative activity is available. Moreover, in six of the nine studies on athletic dropouts reviewed by Gould (1983), "conflict of interest" or the desire to participate in different activities (including different sports) was found to be a prominent reason for dropping out of a sport.

A third class of causal conditions for commitment considers the "forces or barriers" which are supposed to retain the individual in the activity (Rusbult, 1980, 1983). Several forces have been examined by researchers although two constructs have frequently been used: personal

investments and social constraints. In the sport domain, personal investments reflect personal resources such as time, effort and money that individuals put directly into their involvement and which cannot be recovered if they leave (Scanlan, Carpenter, Schmidt, et al., 1993). It is hypothesized that greater personal investments will promote greater sport commitment. Nevertheless, the relative importance of these resources may vary by sport. For example, in contrast to elite figure skating or horse-riding in which financial demands can be high, the investment of money required for recreational sport programs is typically low.

Social constraints addresses the sense of social pressure to participate, such as feeling one has to stay to please various significant others (e.g., Becker, 1960; Kelley, 1983; Scanlan, Carpenter, Schmidt, et al., 1993; Sprecher, 1988). In the sport domain significant others have included parents, friends, head-coach and to other people in general (Scanlan, Carpenter, Schmidt, et al., 1993). It was hypothesized that greater pressure from others to stay involved would increase commitment as this pressure is a consequence of the negative sanctions a person feels would be experienced at the hands of important others if he or she were to leave (Becker, 1960; Kelley, 1983; Sprecher, 1988).

The Social Exchange paradigm has been applied to dating couples (e.g., Bui, et al. 1996; Duffy & Rusbult, 1986; Sprecher, 1988), friendships (Rusbult, 1980), organizations (e.g., Farrell & Rusbult, 1981), and work (Rusbult & Farrell, 1983) and found to be effective in predicting commitment and distinguishing between individuals who stay in a relationship or job and those who leave. In general, greater commitment is associated with higher satisfaction, less attractive alternatives, and greater investments. To date, to our knowledge three studies have tested sport commitment within the broader social exchange paradigm (Scanlan, Carpenter, Schmidt, et al., 1993; Carpenter, et al.,1993; Carpenter and Coleman, 1998). In general, in these studies, sport

enjoyment was the dominant predictor of commitment (β = .22 to .61) along with personal investments (β = .19 to .36) and to a lesser extent social constraints (β =-.07).

These studies have helped test and develop the sport commitment construct. However, several aspects of the model require greater elaboration. First, the costs/benefits analysis is always expressed by a global rating of positive affect, like enjoyment (e.g., Scanlan, Carpenter, Schmidt, et al., 1993), that summarizes the individual's affective experience for an activity or relationship. It is assumed that in rating attractiveness individuals perform the cost/benefit analysis, although no assessment is made of the actual costs and benefits. While sport enjoyment has been found to be a major determinant of commitment, a global rating provides little insight into the actual sources of enjoyment to allow practical information to be gleaned to help coaches. Second, one of the major limits of these studies is that they stopped with athlete desire and resolve to continue sport participation. As noted by Carpenter and Coleman (1998), all research to date has focused solely on the antecedents of commitment. Future research needs to explore the consequences of commitment, that is, the actual behavior of persistence or dropout.

The present research

The main goal of this research was to understand dropout in French female handballers using Social Exchange Theory postulates. To this end, two complementary studies were carried out. In the first study, the aim was to more fully explore the sources of enjoyment by emphasizing the key variables in the costs/benefits analysis. The second study tested the model presented in Figure 1 using structural equation modeling analyses and a prospective design over 8 months to predict actual dropout behaviour.

STUDY 1: Perceived benefits and Sport enjoyment

This study examined the sources of enjoyment by highlighting the variables which take place in the costs/benefits analysis. As was pointed out above, attraction for, or favorability of sport involvement rests on the balance between rewards and costs. In the sport domain, rewards may involve tangible consequences such as medals, diplomas and other trophies, even sometimes money. But they are also psychological such as the achievement of desired goals, and self-administered in the form of self-approval consequent to success in meeting internal standards of performance (Bandura, 1977; Smith, 1986). Studies of participation motivation provide information on the goals or motives young people have for participating in sport. This work has shown that young people are attracted to sport by a variety of reasons including skill improvement and mastery, fun (e.g., the excitement of competition), increased physical fitness (e.g., be physically active, get in shape), affiliation with others (e.g., make friends, be part of a team), feelings of competence (e.g., be better than the others), and recognition and approval from significant others (Gill, Gross, & Huddleston, 1981; Gould, 1987; Gould, Feltz, & Weiss, 1985; Petlichkoff, 1993; Ryckman & Hamel, 1995; Smith, 1986; Wankel & Kreisel, 1985; Weiss & Petlichkoff, 1989). More importantly, these variety of reasons for sport involvement seem to be universally accepted as the primary reasons for participation in different sports (Petlichkoff, 1993), and are consistent with literature on the sources of enjoyment. In reviewing the enjoyment literature, Scanlan and Simons (1992) summarized the predictors of enjoyment to be: learning/improving skills, being with friends/being on a team, feeling competent, receiving instruction and encouragement from coaches, and winning. In a field study with a large youth

sample diverse in age, ethnicity, and gender, Scanlan, Carpenter, Lobel, & Simons (1993) corroborated the existence of these categories to predict enjoyment for youth sport athletes.

We postulate that the costs/benefits analysis consists in each athelete estimating the probability of reaching the most desired consequences for him or her. For example, the more an athlete wishes to learn and to improve skill the greater the anticipated benefit. On the other hand, feeling incompetent will make the costs of sport involvement rise and enjoyment fall. As Rusbult & Farrell (1983) noted, costs and benefits are very connected insofar as the absence of a specific reward frequently implies the presence of a cost. Consistent with this, the sport literature on dropout indicates that the absence of the motives for participation are key explanations for dropout. These factors include fear of failure, excessive competitive pressures, dislike for the coach, interpersonal difficulties with teammates, and boredom (Gould, Feltz, Horn, & Weiss, 1982; Gould, 1987; Petlichkoff, 1993). In this study the favourability of sport involvement (i.e., the balance between rewards and costs) is conceptualised as a latent variable subjacent to individual perceptions of the costs and benefits of involvement. In turn, the higher these perceptions are, the higher sport enjoyment. Since enjoyment has been a key predictor of commitment, articulating the costs and benefits of participation will provide a clearer picture of the key facets of enjoyment.

METHOD

Participants

The population for the study was 488 French women aged from 15-19 years (M = 17.06; SD = 1.32), who participated in an organized handball program during the 1996-97 season and who competed in either sub-district area (a French department; n = 185), district area (n = 178) or national (n = 125) competition level.

Questionnaire

The first part of the questionnaire included demographic information such as date of birth, number of years of practice, amount of time played per week, and the level of participation. The second part assessed several perceptions of the players as well as their level of enjoyment of their sport experience. It also included 10 filler items.

Perceptions. The questionnaire evaluated perceptions related to the most important consequences of participation, namely perceptions of competence, autonomy, relatedness, progress, coach's support. These perceptions were drawn from one major source: a review of the extant literature on youth sport motivation (e.g., Gill, et al., 1981; Gould, 1987; Gould, et al., 1985; Harter, 1988; Nicholls, 1989; Petlichkoff, 1993; Ryckman & Hamel, 1995; Smith, 1986; Vallerand, 1997; Wankel & Kreisel, 1985; Weiss & Petlichkoff, 1989). Moreover, a pilot study with Female handballers from 14 to 18 years (Guillet & Sarrazin, 1997) showed that these five dimensions were most important for their involvement. Two items measured each of these five perceptions. The heading asked the subjects "When you play handball, do you feel you …". Ratings were made on a 5-point scale with opposite categories at the ends (e.g., for perceptions of progress: (1) "do you feel you can't learn anymore" and (5) "do you feel you can learn even more"). To avoid order effects, half of the items used a reversed score. Moreover, one item measured the amount of playing time because several studies have shown that this perception influenced players' satisfaction (Griffin, 1978, Petlichkoff, 1993). Ratings were made on a 5-point scale, with (1) *"almost never"*, (3) *"the first or second half"*, and (5) *"all the match"*.

Enjoyment. Following Scanlan & Lewthwaite (1986) enjoyment was measured by two items ("how much fun do you have?" and "how much do you like to play handball?"). Ratings were made on a 5-point scale, with (1) *" very little "* and (5) *" very much "*.

Procedure

In Spring 1997, at the middle of the handball season, the questionnaire described above (and others) was sent to 1100 female handballers taken randomly among the registers of the French federation of handball. A postage-paid reply envelope was also provided. A letter accompanying the questionnaire explained that the purpose of the study was to know more about why girls played handball and how they lived this sporting experience. It was clearly stated to participants that anonymity and confidentiality of their answers would prevail at all times. Four hundred and eighty eight questionnaires were returned (44% of returns).

RESULTS AND DISCUSSION

With structural equation modeling (LISREL 8, Jöreskog & Sörbom, 1993) we tested a model presented in Figure 2 that included 13 observed variables and 7 latent variables: perceived competence, progress, relatedness, autonomy, coach's support, benefits, and sport enjoyment).

Insert figure 2 here

Since the variables were highly non-normal (tests of zero multivariate skewness = 29.29, $p < .001$ and zero multivariate kurtosis = 69.22, $p < .0001$), PRELIS 2 (Jöreskog & Sörbom, 1993), a preprocessor of LISREL, was used to generate the polychoric correlation and its corresponding asymptotic covariance matrix (Jöreskog, 1990). Both matrices were used as input for the LISREL 8 program (Jöreskog & Sörbom, 1996) and analyzed by the Generally Weighted Least Squares (WLS) method of estimate (Jöreskog, 1990; Jöreskog & Sörbom, 1996).

In view of the current state of controversy regarding measure of overall goodness of fit, it is generally recommended to report multiple indices (Bollen, 1989). Based on the suggestions of

structural equation researchers (e.g., Bentler, 1990; Bollen & Long, 1993), the following fit indexes were used to evaluate the adequacy of the measurement model: the goodness-of-fit index (GFI; Jöreskog and Sörbom, 1996), the normed fit index (NFI; Bentler & Bonett, 1980), and the comparative fit index (CFI; Bentler, 1990). Structural coefficients and residuals variances for each construct are displayed in Figure 2. Goodness-of-fit indices revealed that the model adequately reflected the data (GFI = .98; NFI = .97; CFI = .98). All estimated parameters were significant ($t > 2.00$).

Results corroborated the existence of a latent variable named perceived benefits subjacent to perceptions of competence, autonomy, relatedness, progress, coach's support and to time of play. Moreover, the more the players perceived that the benefits were high, the more enjoyment ($\beta = .95$) they felt. After having controlled measurement error, perceived benefit explained 91% of the variance in enjoyment toward handball. These results are consistent with the literature on the sources of sport enjoyment (e.g., Scanlan, et al., 1993; Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992; Wankel & Kreisel, 1985). The results show that enjoyment can be derived from intrinsic sources (e.g., progress, competence) and extrinsic sources (e.g., relatedness, coach's support). Consequently, as argued by Scanlan and colleagues (Scanlan & Simon, 1992; Scanlan & Lewthwaite, 1986), enjoyment and intrinsic motivation are not synonymous constructs and have to be clearly distinguished.

STUDY 2: Predicting withdrawal in female handballers with Social Exchange postulates

In study 2 we tested a sport commitment model based on the social exchange postulates, presented in Figure 1, using structural equation modeling analyses and a prospective design over

8 months. In view of the results of study 1 we replaced the construct of enjoyment proposed by Scanlan, Carpenter, Schmidt, et al. (1993) with perceived benefit. As noted above, this analysis provides a more comprehensive understanding of the enjoyment construct and is more consistent with the notion of cost and benefits outlined in social exchange theory (Thibaut and Kelley, 1959). It was hypothesized that the greater the perceived benefit attached to handball, the more players have invested in their sport, the less attractive their alternatives to involvement, and the more constrained they feel to continue playing, the greater their commitment. In turn, high commitment will lead to low dropout behavior 8 months later.

METHOD

Participants

Participants were 253 French handball females between the ages of 14 and 16 years (M = 15 years, SD = 0.81). These athletes came from 50 different teams located in the South East of France. All players competed in either sub-district area (n = 115) or district area (n = 138) competition level.

Questionnaire

The questionnaire was made up of three parts. The first part included demographic information such as date of birth and the level of participation. The second part comprised items assessing key constructs employed in past research on sport commitment and their associated measures (Carpenter & Coleman, 1998; Scanlan, Carpenter, Schmidt, et al., 1993) but modified to make them specific to French handball players. *Personal investment* was measured by asking players how much time per week and how many years of practice they had put in to handball. A pilot study (Guillet & Sarrazin, 1997) revealed that money was not an important investment in

this activity and was accordingly omitted. *Commitment* was measured using four items (e.g., "I am determined to continue playing handball"). Two items were used to provide a measure of *social constraints* [e.g., "I feel I have to play handball to please people important for me (parent, coach)"]. The *involvement alternati*ves construct was measured using two items [e.g., "I would like to do something else (to be with my friends, to make another sport or another leisure,…) instead of participating handball"]. The Cronbach alpha coefficients from these last three subscales were, respectively, .86, .81 and .88, indicating acceptable internal consistency (Nunnally, 1978).

The third part of the questionnaire assessed the personal perceptions of the handball players. Perceived handball *competence* was measured using three items (e.g., "When you play handball, do you feel you can dominate the others players") adapted from the Perceived Competence in Life Domains Scale (PCLDS, Losier, Vallerand, & Blais, 1993). Perceived handball *progress* was measured using three items (e.g., "When you play handball, do you feel you can progress"). Participants' feelings of *autonomy* in handball environment was measured using four items (e.g., "When you play handball, do you feel you can express yourself as you want it") adapted from Perceived Autonomy Toward Life Domains Scale (PALDS, Blais, Vallerand, & Lachance, 1990). Perceived handball *relatedness* was measured using four items (e.g., I feel attached to the girls of my team), adapted from the Feelings of relatedness Scale (FRS, Richer and Vallerand, 1998). Perceived *coach's support* was measured using four items (e.g., I feel that my coach is really concerned with me) adapted from the "Echelle des Comportements Interpersonnels" (ECI; Pelletier & Otis, submitted). The Cronbach alpha coefficients for these five subscales were, respectively, .83, .88, .83, .93, and .88, indicating acceptable internal consistency. All the above items were assessed using 7-point Likert scales ranging from (1) *"strongly disagree"* to (7) *"strongly agree"*. Finally, the players evaluated their

average time of play in match on a 7-point category scale with (1) *"almost never"*, (4) *"the first or second half"*, and (7) *"all the match"*.

Procedure

The assessment was conducted at midseason to ensure that all athletes would have sufficient experience with their current program. In Spring 1999 the questionnaire described above was sent to 532 14 to 16-years old players in a French handball league. A postage-paid reply envelope was also provided. A letter accompanying the questionnaire explained the purpose of the study and it was clearly stated to participants that anonymity and confidentiality of their answers would be ensured. Two hundred and fifty three questionnaires were returned (47 % of returns). Eight months later, that is after the beginning of the 1999/2000 season, the French Federation of Handball was contacted in order to establish a list of players who were still playing and those who had dropped out (i.e., those which did not re-register). Through these procedures a total of 23 drop-out cases were identified[1].

RESULTS

Two sets of analyses were carried out. The first set of analyses focused on the differences between the dropout and persistent players on the means of the different subscales. The second set of analyses tested the model proposed in Figure 1. Our primary method of analysis was structural equation modeling (LISREL 8; Jöreskog & Sörbom, 1996). This method, which is particularly useful in longitudinal research (Bentler, 1980), allows examination among all the constructs involved in a model using a latent representation of constructs that is not influenced by measurement error.

Persistent *vs* dropout : Personal perceptions

A preliminary multivariate analysis of variance (MANOVA) was conducted with type of player (dropout *vs* persistent) as an independent variable and perceptions of competence, progress, autonomy, relatedness, coach's support, and time of play as dependent variables. Results revealed a significant main effect for the type of player, Wilk's lambda = .82, Rao's R (6, 246) = 9.3, $p < .0001$. Follow-up univariate analyses of variance (ANOVAS) revealed significant differences between dropout and persistent players for all six variables (see Table 1). Dropout players perceived themselves as significantly less competent, less autonomous, less related to their team, lower in progress and less supported by their coach than persistent players. In addition, dropout players cited a lower time of play in matches than persistent players. The means and standard deviations of the perception subscales as a function of type of players appear in Table 1.

Insert table 1 here

Social constraints, alternatives opportunities, commitment, and personal investments

A second MANOVA was conducted to determine whether differences on social constraints, involvement alternatives, commitment, and personal investments (i.e., years of practice and number of hours of training per week) existed as a function of player status. Results revealed a significant multivariate effect for the type of player, Wilk's lambda = .77, Rao's R (5, 247) = 15.07, $p < .0001$. Follow-up analyses revealed significant differences between dropout and persistent players for social constraints, involvement alternatives, commitment, and years of practice (see Table 2). Persistent players perceived less pressure from significant others, had less

attractive alternatives, had higher commitment and had invested more in term of years of practice, than dropout players.

Insert table 2 here

Test of a sport commitment's model: a two step modeling approach

We tested the model presented in Figure 1 using structural equation modeling. In light of the already high number of variables in the model, we decided to reduce the number of variables prior to testing the model. First, the average scale score on the perception sub-scales were used for each of these constructs. Next, the items on the commitment sub-scale were randomly aggregated to form only two composite scores for this construct (Bentler, 1980; Byrne, 1994). Correlations between the two pairs of items composing each of these indexes were .70 and .75.

Although the measurement (factor structure) and structural (substantive) submodels can be assessed simultaneously with LISREL, we adopted Anderson and Gerbing's (1988) two-step modeling approach which consists in evaluating them separately (see also Gramzow, Sedikides, Panter & Insko, 2000). The first step (the measurement model) corresponds to a confirmatory factor analysis with observed and latent variables. One goal was to check if the factorial structure of the 'benefit' variable identified in study 1 was replicated. The second step (structural model) tested the theoretical model by examining the predicted relations among the latent factors and actual dropout behavior. The primary advantage of this two-step approach is a reduced potential for interpretational confounding. If the measurement and structural specifications are attempted simultaneously, then the strengths and patterns of relations between the measured variables and the latent factors (i.e., the measurement model) can change dramatically as the function of the structural model is assessed. Thus, the factor structure becomes dependent on the specific

substantive model under examination and may lead to poor overall or ambiguous model fit (Gramzow et al., 2000).

Step 1 : Measurement model

We specified a measurement model representing the hypothesized five-factor structure, subjacent with the 14 manifest variables. As recommended by Anderson and Gerbin (1988), the latent factors have been allowed to correlate freely during assessment of the measurement submodel. As in study 1, because the variables were highly non-normal (tests of zero multivariate skewness = 85.65, $p < .001$ and zero multivariate kurtosis = 105.28, $p < .001$), the polychoric correlation and its corresponding asymptotic covariance matrix were used and analyzed by the WLS method of estimate.

The measurement model provided an adequate fit to the data, GFI = .99; NFI = .98; CFI = .98. All λ were significant ($t > 2.00$). Standardized estimates, residuals variances and interfactor correlations for this model are displayed in Figure 3.

Insert Figure 3 here

Step 2: Structural model

After assessing the adequacy of the factor structure we focused next on the pattern of structural relations among these five latent dimensions and actual dropout behavior assessed through a dichotomous variable (*1 = dropped out*; *2 = re-enrolled*). Structural coefficients and residual variances for each construct are displayed in Figure 4 (to reduce the Figure the measurement model was not reported). Goodness-of-fit indices revealed that the model adequately reflected the data (GFI = .97; NFI = .95; CFI = .97). All estimates parameters were significant ($t > 2.00$) except for the effect of personal investments on commitment. The results

revealed that social constraints and involvement alternatives were negatively related to commitment ($\underline{\beta}$ = -.14 and $\underline{\beta}$ = -.19, respectively). Conversely, perceived benefits had a strong positive influence on commitment ($\underline{\beta}$ = .79). In turn, high commitment negatively predicted actual drop out 8 months later ($\underline{\beta}$ = -.66).

Insert Figure 4 here

GENERAL DISCUSSION

Past research has highlighted that 50% of French woman handball players dropout between the age of 13 and 15 (Guillet & Sarrazin, 1999). This high level of dropout has alarmed the French Handball Federation and research is needed to identify the underlying factors. This is particularly important if the goal is to increase the physical activity levels of this population. The purpose of this research was to explain the phenomenon of withdrawal in female handball with social exchange postulates (Rusbult, 1983; Scanlan, Carpenter, Schmidt, et al., 1993; Thibaut & Kelley, 1959).

According to sport commitment models based on social exchange postulates, the most immediate predictor of actual behavior of dropout versus persistence is the athlete's level of subjective *commitment* to the activity (Figure 1). Low levels of commitment are expected to lead to high sport dropout. Sport commitment is hypothesized to be a function of four antecedents: (1) athlete's costs/benefits analysis of the sport experience, (2) perceived attractiveness of the best available alternative to the sport participation, (3) level of investment and (4) athlete's feelings of social constraints. This model (see Figure 1) posits that the more athletes perceive that the

benefits outweigh the costs, the more they have invested in their sport, the less attractive their alternatives to involvement and the more constrained they feel to continue playing, the greater their commitment. The present results provide strong support for the proposed model.

On the Consequences of Commitment

Results revealed that female handball players who had dropped out had lower levels of commitment. Moreover, results of structural equation modeling, consistent with past research on relationships (Bui et al., 1996; Rusbult, 1980, 1983; Duffy & Rusbult, 1986; Sprecher, 1988) and job turnover (Rusbult & Farrell, 1983) supported the hypotheses that a lack of commitment leads to dropping out of sport, in this study, as assessed 8-months later. These results extend the research on sport commitment (e.g., Carpenter & Coleman, 1998) by demonstrating that sport commitment is linked to actual stay/leave behaviour. In this study, commitment predicted 44 % of the variance in the actual behaviour. This link between intentions and behavior was only of moderate magnitude and is due to the fact that dropout behavior is not fully under the control of the athletes. In some cases, the decision to withdraw is externally controlled (Gould, 1987). For example, athletes who are cut from teams, or suffer from such severe injuries that they are no longer able to participate, have no choice but to withdraw from the activity. It is thus possible that 8 month earlier some athletes did not express a desire to leave the activity but nevertheless did due to factors outside of their control (e.g., an injury). Future studies should check if the final decision to drop out is within the control of the individual athlete or not.

On the cost/benefit analysis

One of the main postulates of the social exchange model is that people participate in an activity if the balance between rewards and costs is favorable (Thibaut & Kelley, 1959; Smith, 1986). In the majority of the studies on engagement, the costs/benefits analysis is expressed by a global rating of positive affect like satisfaction (e.g., Rusbult, 1980, 1983) or enjoyment (e.g.,

Scanlan, Carpenter, Schmidt, et al., 1993). Enjoyment has been consistently found to be one of the strongest predictors of commitment. However, a global measure of affect provides little information on the sources of enjoyment and the process of the cost-benefit analysis. By undertaking a cost-benefit analysis we have sought to better understand the variables taken into account in the cost/benefit analysis by female handballers.

We conceptualised the balance between rewards and costs as a latent variable subjacent to individual perceptions of realizing the most desired consequences of sport participation. The higher these perceptions, the greater the perceived benefits. Costs are the negative side of benefit because the higher the benefits are, the lower the costs (Rusbult & Farrell, 1983). A review of the extant literature on youth sport motivation (e.g., Gill, et al., 1981; Gould, 1987; Gould, et al., 1985; Harter, 1988; Nicholls, 1989; Petlichkoff, 1993; Ryckman & Hamel, 1995; Smith, 1986; Vallerand, 1997; Wankel & Kreisel, 1985; Weiss & Petlichkoff, 1989), on the sources of sport enjoyment (e.g., Scanlan & Lewthwaite, 1986; Scanlan & Simons, 1992; Scanlan et al., 1993; Wankel & Kreisel, 1985), and a pilot study with Female handballers (Guillet & Sarrazin, 1997) emphasized six important dimensions for sport among this population, namely, competence, autonomy, relatedness, progress, coach's support and the amount of playing time.

Results showed that players who dropped out perceived themselves as significantly less competent, less autonomous, less related to their team, lower in progress, less supported by their coach and cited a lower time of play in matches than players who persisted. Moreover, these perceptions were interrelated and the results corroborated the existence of a latent variable – named 'perceived benefit'- subjacent to these perceptions. This construct strongly predicted enjoyment ($\underline{\beta}$ = .95, study 1) and commitment ($\underline{\beta}$ = .76, study 2). Moreover, study 2 showed a

difference in the magnitude of the latent variables which predicted commitment with perceived benefits the predominant predictor of commitment.

What is interesting to note it is that the different perceived benefits which emerged in studies 1 and 2 have resonance with self-determination theory. Self-determination theory developed by Deci and Ryan (1991, 2000) assumes that people initiate and persist at behaviors to the extent that they believe the behaviors will lead to desired outcomes or goals. More specifically, Deci and Ryan (2000) postulated that satisfying the fundamental needs of autonomy, competence, and relatedness are linked directly to well-being and increased satisfaction. People are more likely to engage in activities that social groups relevant to them value, especially when they feel efficacious with respect to those activities. Secondly, the experience of autonomy is also a critical element for increased satisfaction. Finally, one of the reasons people initially engage in particular activities is because the behaviors are prompted, modeled, or valued by significant others to whom they feel attached or related. A recent study (Sheldon, Elliot, Kim, & Kasser, 2001) showed that when people are asked to bring to mind deeply satisfying experiences, they think of experiences in which they felt strongly autonomous, competent, or related to others.

In the research described here, the benefits to emerge as important are consistent with the basic psychological needs - competence, autonomy, and relatedness - argued within self-determination theory. These results suggest that integrating self-determination theory and social exchange theory represents a potentially promising new line of research that warrants further scientific scrutiny, particularly to identify the perceived benefits in a specific domain such as sport. It is possible that some important benefits have been missed in this research and that the list of perceived benefits described in this work is not exhaustive. Future studies need to determine if the six perceptions of the cost/benefit analysis underlined in the studies reported here

are found with other populations (e.g., high level athletes or male athletes) or if they must be supplemented by other perceptions.

On the other antecedents of commitment

In addition to the positive impact of perceived benefits on sport commitment, the structural equation modeling results of study 2 revealed a negative influence for social constraints (β = -.14) and involvement alternatives (β = -.19). The involvement alternatives finding is in line with model predictions and sport attrition studies which have found that conflicts of interest and/or interest in other activities were the most consistently cited motives for sport withdrawal (Gould, 1987). This situation is more pertinent during adolescence, a period characterized by emergence of a need for independence and changes of interests (Lindner, Johns & Butcher, 1991). These changes lead to an attraction for other activities in which many of the athlete's peers are deeply involved (e.g., hanging out with friends, developing a relationship with a boy friend). Maehr and Braskamp (1986) speak of "perceived options," defined as behavioral alternatives or action possibilities that a person perceives to be available to him or her in any given situation. Such individuals may still enjoy their sport but favor the alternative; that is, they weigh the costs/benefits of being involved and choose to withdraw because the alternatives are more attractive (Petlichkoff, 1993a). Nevertheless, the involvement alternative construct was a non-significant factor in past studies (e.g., Carpenter et al., 1993; Carpenter and Coleman, 1998). Further research is necessary to evaluate if it is a specificity of the female population of this study or measurement problem noted in prior studies. More generally, the impact of this variable among girls and boys at various stages of the athlete's development and on different levels of practice requires further investigation.

Contrary to social exchange hypothesis and the sport commitment model, social constraints negatively predicted commitment (β = -.14). Carpenter et al. (1993) also reported a positive relationship and argued in part that the positive relationship between commitment and social constraints revealed in close relationships studies (e. g., Kelley, 1983) may indicate that the nature of adult close relationships may be very different from youth sport involvement. In close relationships, the positive relationship between social constraints and commitment is based on the assumption that pressure to continue is a function of the perceived negative sanctions from others the individual would experience if he or she were to terminate involvement. Further, it also is assumed that the individual is motivated to comply with these perceived sanctions (Rusbult, 1988). Typically, youth sport is viewed as a voluntary free-choice activity that is enjoyable to most continuing participants (see Scanlan & Simons, 1992). Accordingly, most athletes participate because they want to, not because they have to (Csikszentmihayli, 1991). This negative relation between social constraints and commitment suggests that stress can occur when young athletes feel pressure to participate (Scanlan & Lewthewaite, 1984). This aversive state of stress may lower commitment. Moreover, feelings of obligatory participation, in what is generally viewed as a voluntary activity, also may undermine feelings of personal control and self-determination (see Ryan & Deci, 2000, Vallerand, 1997), and work to lower the desire and resolve to continue.

Finally, contrary to past studies, personal investment was not significantly related to commitment. However, examining the differences between players who persisted and those who dropped out did show that persistent players had more invested in terms of years of practice than dropout players, although the two populations were not different in terms of hours of training per week. In addition, personal investment was correlated with commitment (r = .22, cf. figure 3).

Combined, these results do suggest that personal investment may play an important role even though the results of structural equation modeling did not support the hypothesis that the higher personal investment is related to higher commitment. The non-significant result seems related to two reasons. First, the sample represented a sub-district or district area competition level. At this level the frequency of training is not very high (the majority of players only train for four hours per week) and one can suppose that personal investments are less relevant. In addition, the girls of this population had not invested many years of practice in their sport (cf. Table 2). Accordingly in this population, personal investments would have had a negligible influence on commitment. Second, the way in which personal investments were measured in this study may have led to the non-significant result. We employed more "objective" variables (e.g., number of year of practice) whereas in the past studies the measures were more "subjective" (e.g., "how much of (1) your time, (2) effort, (3) money have you put into playing this season?"). It is possible that "perceptions" of personal investments counts more than objective reality. Future research needs to address this supposition.

The results of these studies support the application of the sport commitment model to predicting those French female handball players who dropout versus those who persist. The model explained 75% of the commitment variance and the important determinants of commitment were consistent with extant research. Moreover, these studies highlighted the principal variables taken into account in the cost/benefit analysis. However, the generalizability of these results to, for example, male athletes or high level athletes, remains to be tested.

Practical implications

The results of these studies have at least one major practical implication. This research indicates that when major participation motives or major psychological needs (e.g., developing skill, being with friends) are not achieved, the costs of involvement exceed the benefits. It is

recommended that the coach takes into account these various reasons when working with his or her athletes. Gould and Horn (1984) have suggested that adult leaders structure the sport environment so that theses motives are fulfilled. Special emphasis should be placed on skill instruction for children of all ability levels. Excitement and fun must be maintained in practices and competitions by keeping athletes active and by allowing all adolescents the opportunity to participate. Special efforts should be made to meet the affiliation needs of athletes. Finally, success should be more broadly defined as personal improvement, in contrast to winning.

In summary, this study suggests that one of the priorities of the coach and other sports leaders (e.g., parents, administrators) is to create a social environment that allows players to achieve their motives for participation. Specifically, we should seek to ensure that players'expectations related to progress, relatedness, competence, sport enjoyment, significant others'support, should be met if we wish enjoyment to be high and correspondingly commitment and actual continued involvement.

REFERENCES

Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological bulletin, 103, 411-423.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.

Becker, H.S. (1960). Notes on the concept of commitment. American Sociological Review, 66, 32-40.

Bentler, P.M. (1980). Multivariate analysis with latent variables: Causal modeling. Annual Review of Psychology, 31, 419-456.

Bentler, P.M. (1990). Comparative fit indexes in structural models. Psychological Bulletin, 107, 238-246.

Bentler, P.M., & Bonett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structure. Psychological Bulletin, 88, 588-606.

Blais, M.R., Vallerand, R.J., & Lachance, L. (1990). Predicting physical activity intentions using goal perspectives and self-determination theory approaches. European Psychologist, 4, 83-89.

Bollen, D.A. (1989). Structural equations with latent variables. New York: Wiley.

Bollen, D.A. & Long, J.S. (1993). Testing structural equation models. Newbury Park, CA: Sage.

Brickman, P. (1987). Commitment. In P. Brickman (Ed.), Commitment, conflict, and caring (pp. 1-18). Englewood Cliffs, NJ: Prentice Hall.

Bui, K.V.T., Peplau, L.A., & Hill, C.T. (1996). Testing the rusbult model of relationship commitment and stability in 15-year study of heterosexual couples. Personality and Social Psychology Bulletin, 22(12), 1244-1257.

Byrne, B. (1994). Structural Equation Modeling with EQS and EQS/Windows. Thousand Oks, California: Sage Publications.

Carpenter, P.J., & Coleman, R. (1998). A longitudinal study of elite youth cricketers' commitment. International Journal of Sport Psychology, 29, 195-210.

Carpenter, P.J., Scanlan, T.K., Simons, J.P., & Lobel, M. (1993). A test of the Sport Commitment Model using structural equation modeling. Journal of Sport and Exercise Psychology, 15, 119-133.

Csikszentmihayli, M. (1991). Talent and enjoyment: Findings from a longitudinal study. Keynote address at the annual conference of the association for the advancement of applied sport psychology, Savannah, GA.

Deci, E.L., & Ryan, R.M. (1985). Intrinsic motivation and self-determination in human behavior. New York: Plenum.

Deci, E.L., & Ryan, R.M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), Nebraska symposium on motivation: Vol 38. Perspectives om motivation (pp. 237-288). Lincoln: University of Nebraska Press.

Deci, E.L., & Ryan, R.M. (2000). The What and Why of goal pursuits: humans needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227-268.

Duffy, S.M., & Rusbult, C.E. (1986). Satisfaction and commitment in homosexual and heterosexual relationships. Journal of Homosexuality, 12(2), 1-23.

Farrell, D., & Rusbult, C.E. (1981). Exchange variables as predictors of job satisfaction, job commitment, and turnover: the impact of rewards, costs, alternatives, and investments. Organizational Behavior and Human Performance, 27, 78-95.

Gill, D., Gross, J., & Huddleston, S. (1981). Participation motivation in youth sports. In G. Roberts & D. Landers (Eds.), Psychology of motor behavior and sport – 1980 (111). Champaign, IL: Human Kinetics.

Gould, D. (1983). Future directions in youth sports participation research In: L Wankel & R Wilberg (Eds.), Psychology of sport and motor behavior: Research and practice. Edmonton: University of Alberta Faculty of Physical Education and Recreation.

Gould, D. (1987). Understanding attrition in children's sport. In D. Gould & M. R. Weiss (Eds.), Advances in pedriatric sciences: Vol 2. Behavior issues (pp. 61-85). Champaign, Illinois: Human Kinetics.

Gould, D., Feltz, D., & Weiss, M.R. (1985). Motives for participating in competitive youth swimming. International Journal of Sport Psychology,16, 126-140.

Gould, D., Feltz, D., Horn, T. & Weiss, M.R. (1982). Reasons for attrition in competitive youth swimming. Journal of Sport Behavior, 5, 155-165.

Gramzow, R.H., Sedikides, C., Panter, A.T., & Insko, C.A. (2000). Aspects of Self-Regulation and Self-Structure as predictors of perceived emotional distress. Personality and Social Psychology Bulletin, 26 (2), 188-205.

Guillet, E., & Sarrazin, P. (1997). Abandon et investissement chez les joueuses de handball. [Dropout and persistence in female handballers]. Unpublished manuscript, university of Grenoble, France.

Guillet, E., & Sarrazin, P. (1999). Utiliser l'analyse de survie pour déterminer les moments et les taux d'abandon de la pratique sportive: l'exemple du handball féminin. [Using survival analysis to determine the moments and the rates of dropout in sport: the example of the female handball]. Unpublished manuscript, university of Grenoble, France.

Guillet, E., Sarrazin, P., & Cury, F. (2000). L'abandon sportif, de l'approche descriptive aux modèles interactionnistes. [Sport dropout, to descriptive approach to interactive models]. Science et Motricité, 41, 47-60.

Harter, S. (1988) The self-perception profile for adolescents. Unpublished manuscript, University of Denver.

Homans, G. (1961). Social behavior: It's elementary forms. New York: Harcourt, Brace & World.

Johns, D.P., Lindner, K.J., & Wolko, K. (1990). Understanding attrition in female competitive gymnastics: Applying social exchange theory. Sociology of Sport Journal, 7, 154-171.

Jöreskog, K. (1990). New developments in LISREL: Analysis of ordinal variables using polychoric correlations and weighted least squares. Quality and Quantity, 24, 387-404.

Jöreskog, K.G., & Sörbom, D. (1993). Prelis 2: User's reference guide. Chicago: SS Inc.

Jöreskog, K.G., & Sörbom, D. (1996). Lisrel 8 : User's reference guide. Chicago : SSI Inc.

Kelley, H.H. (1983). Love and commitment. In H.H. Kelley, E. Berscheid, A. Christensen, J.H. Harvey, T.L. Huston, G. Levinger, E. McClintock, L.A. Peplau, &D.R. Petersen (Eds.), Close relationships (pp. 265-314). New York: W.H. Freeman and Compagny.

Kelley, H.H.& Thibaut, J.E. (1978). Interpersonal relations: A theory of interdependence. New York: Wiley.

Lindner, K.J., Johns, D.P., & Butcher J. (1991). Factors in withdrawal from youth sport: a proposed model. Journal of Sport Behavior, 14 (1), 3-

Losier, G.F., Vallerand, R.J. & Blais, M.R. (1993). Construction et validation de l'échelle des perceptions de compétence dans les domaines de vie (Construction and validation of the perceived competence toward life domains scale). Sciences et comportement, 23, 1-16.

Maehr, M.L., & Braskamp, L.A. (1986). The motivation factor/A theory of personal investment. Lexington, MA: Lexington Books.

Martinsen, E.W., & Stephens, T. (1994). Exercise and mental health in clinical and freeliving populations. In R.K. Dishman (Ed.), Advances in exercise adherence (pp. 55-72). Champaing, IL : Human Kinetics.

Nicholls, J.G. (1989). The competitive ethos and democratic education. Cambridge, MA : Harvard University Press.

Nunnaly, J.C. (1978). Psychometric theory . New theory (2nd Ed.). NewYork: Mc Graw-Hill.

Pelletier, L.G., & Otis, N. (submitted). Construction et validation de l'échelle des Comportements Interpersonnels.

Pelletier, L.G., Fortier, M.S., Vallerand, R.J.& Briere, M.B. (in press). Associations between perceived autonomy support, forms of self-regulation, and persistence: A prospective study.

Petlichkoff, L.M. (1982). Group differences on achievement goal orientations, perceived ability, and level of satisfaction during an athletic season. Pediatric Exercise Science, 5, 12-24.

Petlichkoff, L.M. (1993). Coaching children: understanding the motivational process. Sport Science Review, 2, 48-61.

Richer, S.F, & Vallerand, R.J., (1998). Construction et validation de l'Echelle du Sentiment d'Appartenance Sociale (ESAS). European review of Applied Psychology / Revue Européenne de Psychologie Appliquée, 48, 129-137.

Rusbult, C.E. (1980). Commitment and satisfaction in romantic associations: A test of the investment model. Journal of Experimental Social Psychology, 16, 172-186.

Rusbult, C.E. (1983). A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvement. Journal of Personality and Social Psychology, 45, 101-117.

Rusbult, C.E. (1988). Commitment in close relationships: the investment model. In L.A. Peplau, D.O. Sears, S.E. Taylor, & J.L. Freedman (Eds.), Reading in social psychology: Classic and contemporary contributions (pp.147-157). Englewood Cliffs, NJ: Prentice Hall.

Rusbult, C.E. & Farrell, D. (1983). A longitudinal test of the investment model: The impact of job satisfaction, job commitment, and turnover of variations in rewards, costs, alternatives and investments. Journal of Applied Psychology, 68, 429-438.

Russell, D.G., Allen, J.B., & Wilson, N.C. (1996). Youth sport in New Zealand. In P. DeKnop, L.M. Engstrom, B. Skirstad, & M. Weiss (Eds.), Worldwide trends in child and youth sport. Champaign, IL : Human Kinetics.

Ryan, R.M., & Deci, E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. American Psychologist, 55, 68-78.

Ryckman, R.M., & Hamel, J. (1995). Male and Female Adolescents' motives related to involvement in organized team sports. International Journal of Sport Psychology, 26, 383-397.

Sallis, J.F. & Patrick, K. (1996). Physical activity guidelines for adolescents : A consensus statement. Pediatric Exercise Science, 6, 302-314.

Sarrazin, P., & Guillet, E. (in press). « Ils ne se réinscrivent pas ! » Variables et processus de l'abandon sportif. In F. Cury & P. Sarrazin (Eds.), Théories de la motivation et pratiques sportives : états de la recherche. Paris: PUF, pratiques corporelles.

Sarrazin, P., Vallerand, R.J., Guillet, E., Pelletier, L. & Cury, F. (submitted). Motivation and dropout in female handballers: a 21-month prospective study. European Journal of Social Psychology.

Scanlan, T.K., Carpenter, P.J. (1993). Key ingredients to commitment in sport. In J.R. Nirsch & R. Seiler (Eds.), Movement and sport (pp.31-31). Sankt Augustin, Germany: Academia Verlag.

Scanlan, T.K. & Simons, J.P. (1992). The construct of sport enjoyment. In: G. Roberts (Ed.), Motivation en sport and exercise (pp.199-215). Champaign, IL: Human Kinetics.

Scanlan, T.K., Carpenter, P.J., Schmidt, G.W., Simons, J.P. & Keeler, B. (1993). An introduction to the sport commitment model. Journal of Sport and Exercise Psychology, 15, 1-15.

Scanlan, T.K., Carpenter, P.J., Lobel, M., Simons, J.-P. (1993). Sources of enjoyment for youth sport athletes. Pediatric exercise science, 5(3), 275-285.

Scanlan, T.K. & Lewthwaite, R. (1986). Social psychological aspects of the competitive sport experience for male youth sport participants: IV. Predictors of enjoyment. Journal of Sport Psychology, 8, 25-35.

Scanlan, T.K., Simons, J.P., Carpenter, P.J., Schmidt, G.W., & Keeler, B. (1993). The sport Commitment Model: Measurement development for the youth-sport domain. Journal of Sport and Exercise Psychology, 15, 16-38.

Schmidt, G.W. & Stein, G.L. (1991). Sport commitment: A model integrating enjoyment, dropout, and burnout. Journal of Sport and Exercise Psychology, 8, 254-265

Smith, R.E. (1986). Toward a cognitive-affective model of athletic burnout. Journal of Sport Psychology, 8, 36-50.

Sprecher, S. (1988). Investment model, equity and social support determinants of relationship commitment. Social Psychology Quarterly, 51, 318-328.

Thibaut, J.W. & Kelley, H.H. (1959). The social psychology of groups. New York: Wiley.

Vallerand, R.J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M.P. Zanna (Ed.), Advances in Experimental Social Psychology Vol 29 (pp.271-360). New York: Academic Press.

Wankel L., & Kreisel P. (1985) Factors underlying enjoyment of youth sports: sport and age group comparisons. Journal of sport psychology, 7, 51-64.

Wankel, L.M., Mummery, W.K. (1996). Canada. In P. Deknop, L.M. Engstrom, B. Skirstad, & M. Weiss (Eds.), Worldwide trends in child and youth sport. Champaign, IL: Human Kinetics.

Weiss, M.R., Chaumeton, N. (1992). Motivational orientations in Sport. In TS Horn (Ed.), Advances in sport Psychology (pp. 61-99). Human Kinetics.

Weiss, M.R. & Petlichkoff, L.M. (1989). Children's motivation for participation in and withdrawal from sport: Identifying the missing links. Pediatric Exercise Science, 1, 195-211.

Footnote

1. It appears that less than 10% of the current sample dropped out. This figure is significantly lower than the 50% dropout rate cited in the literature review to this research. The discrepancy is explained when it is noted that the 50% rate corresponds to dropout over several years (3 to 4 years) whereas the rate reported in this study is for approximately one year. If the same attrition rate was maintained over the next three years, the number of players to dropout of the program would approach the 50% rate cited.

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Table 1

Means and Standard Deviations of the personal perceptions for Dropout and Persistent players

	Dropout players (n = 23)		Persistent players (n = 230)		F(1, 251)
Personal perceptions	M	SD	M	SD	p
Competence	3.13	1.22	4.17	1.23	<.001
Relatedness	4.02	1.92	5.70	1.16	<.001
Progress	3.52	1.66	4.73	1.49	<.001
Autonomy	3.04	1.38	4.41	1.36	<.001
Coach's support	3.45	1.65	4.39	1.51	<.001
Time of play	4.65	1.64	5.70	1.23	<.001

Table 2

Means and standard deviations of the commitment, social constraints, involvement alternatives, and personal investments scores for dropout and persistent players.

	Dropout players (n = 23)		Persistent players (n = 230)		F(1, 251)
	M	SD	M	SD	p
Commitment	3.21	2.04	5.82	1.44	<.001
Social constraints	2.08	1.48	1.41	0.80	<.001
Involvement Alternatives	3.78	2.51	2.86	2.12	<.05
Years of practice	2.65	1.46	3.60	2.26	<.04
Hours per week	3.76	1.56	3.44	1.17	ns

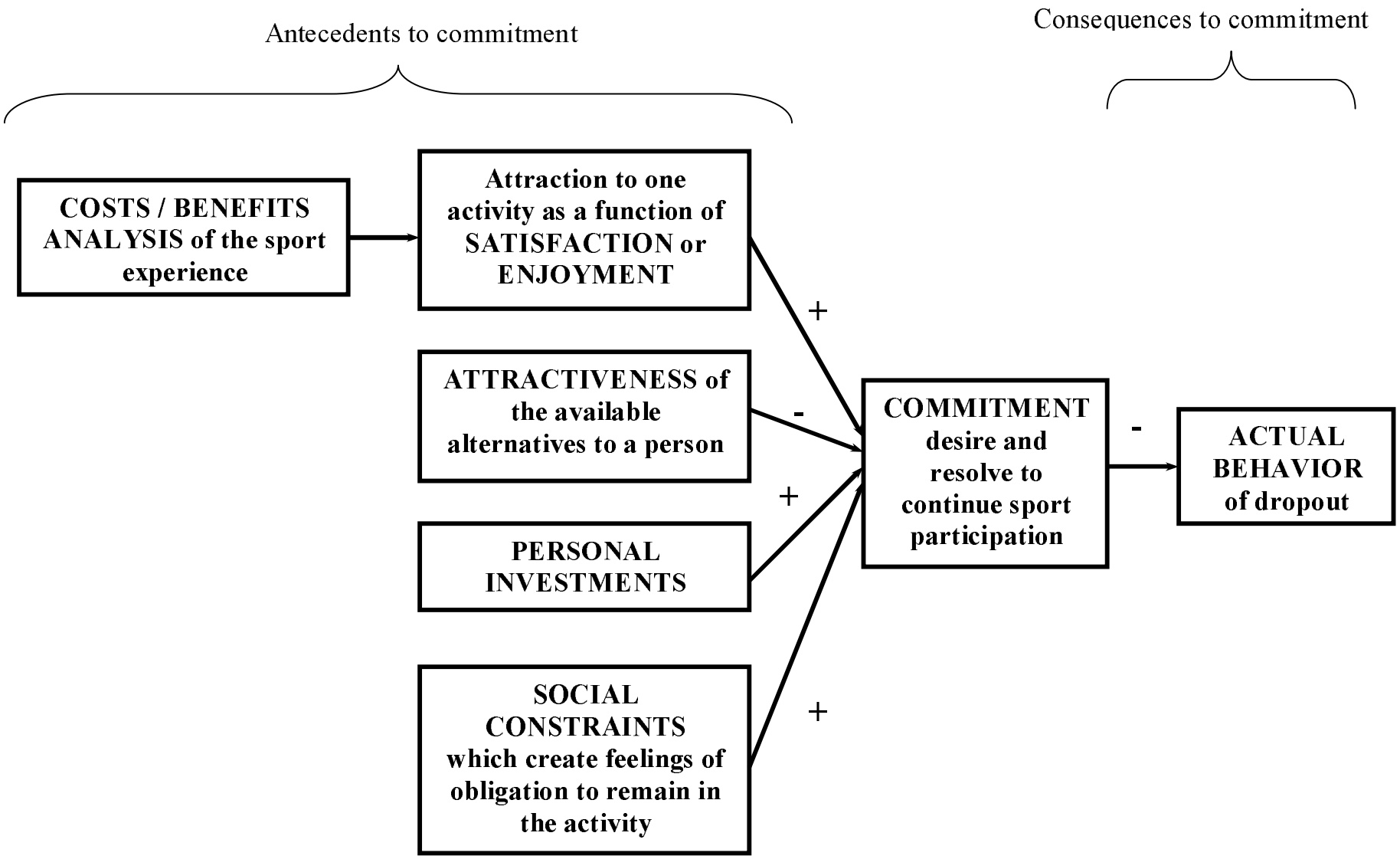
Figure Captions

Figure 1. Main variables in the Social Exchange framework to explain the process of dropping out of sport.

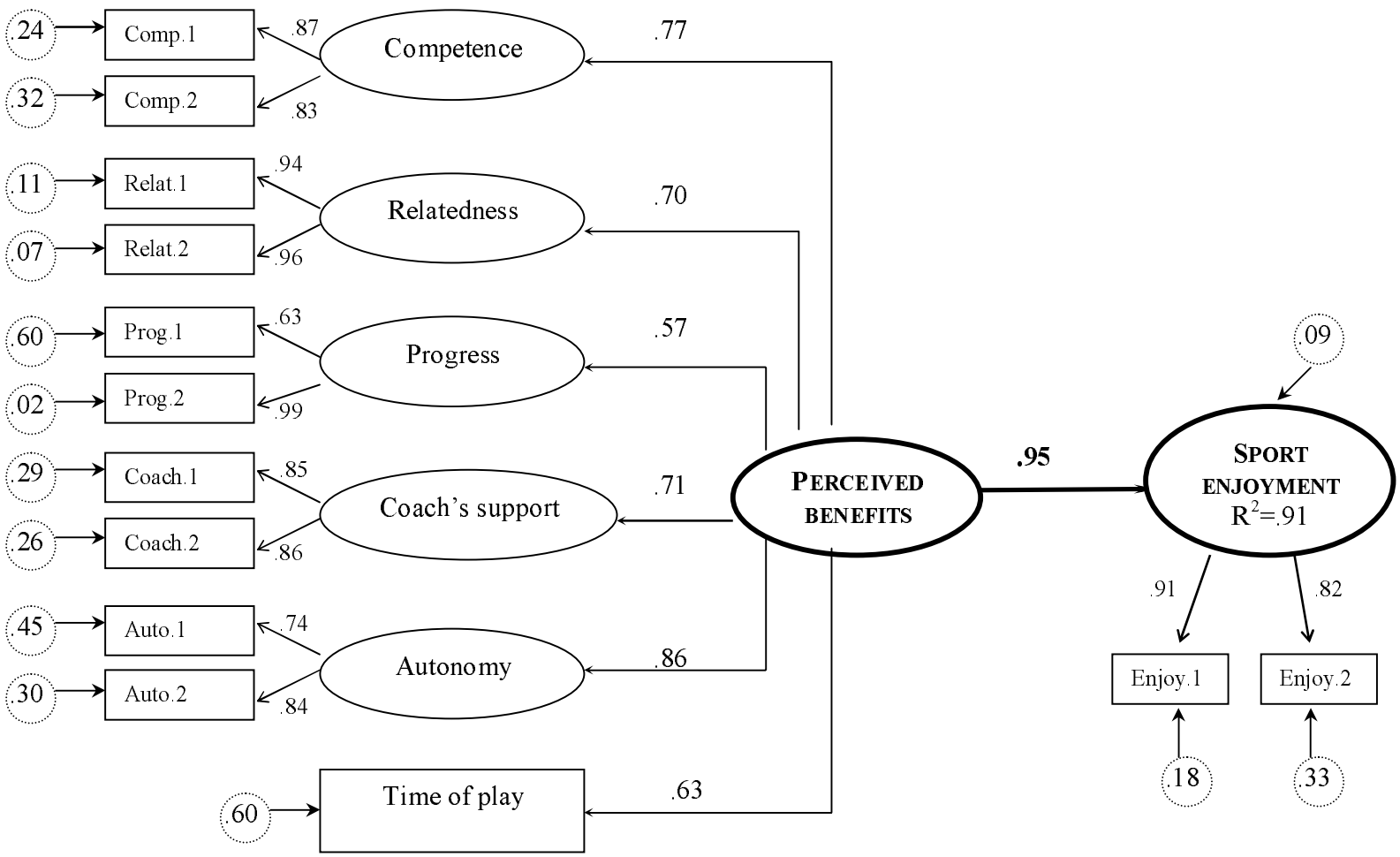
Figure 2. Structural model with Generally Weighted Least Squares estimates for the relations between perceived benefits and sport enjoyment.

Figure 3. Measurement model: Generally Weighted Least Squares estimates for five-factor model. Circles represent latent constructs and squares represent measured variables.

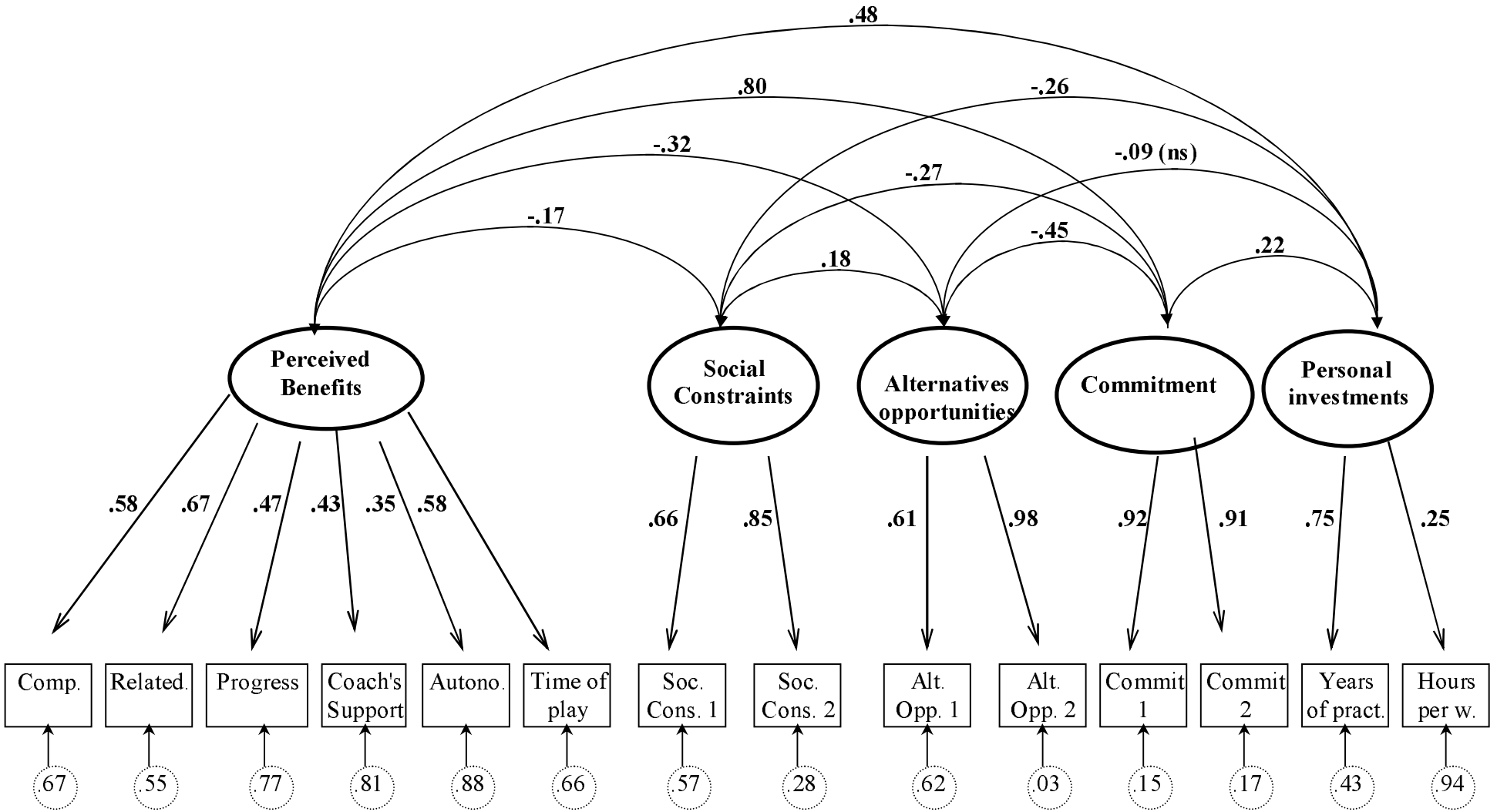
Figure 4. Structural model with Generally Weighted Least Squares estimates for the relations among main variables of the Social Exchange model to explain the process of dropping out of sport.



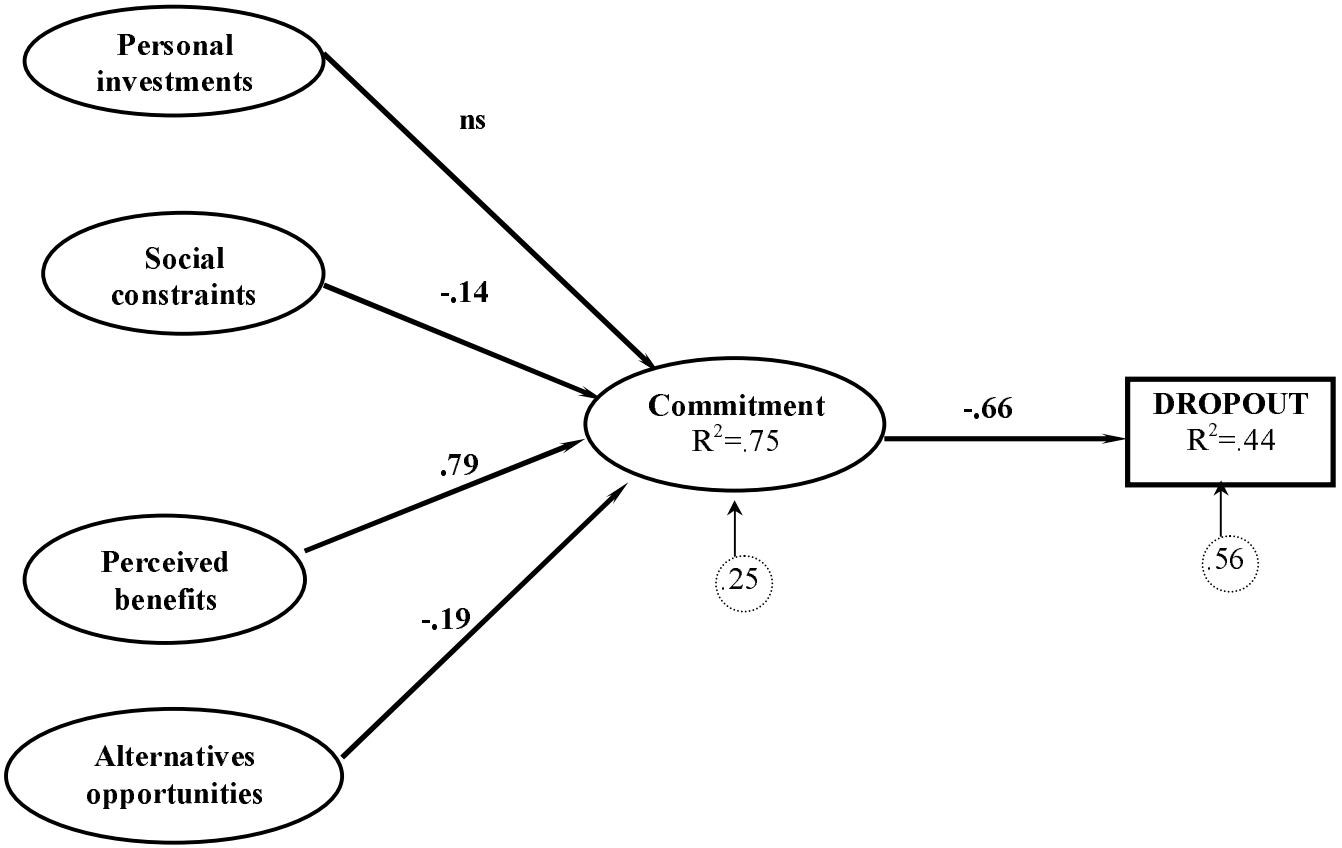
The plus (+) and minus (-) signs presented in this figure represent the hypothesized direction of influence of each variable.



All parameters are standardized and significant at p < .05. Residual variances are shown in small circles (dotted line)



All parameters are standardized and significant at $p < .05$. Residual variances are shown in small circles (dotted line).



All parameters are standardized and significant at p < .05. Residual variances are shown in small circles (dotted line).